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Soybean Yield Response to Headline Fungicide Applications

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Abstract
BASF Corporation agronomists have reported that applications of Headline fungicide improve general soybean plant health and ultimately improve yields. The response to Headline fungicide has been evaluated at the Northern Research Farm for the past three years. In 2005, a single soybean variety sprayed at stage R3 yielded 4.3 bushels/acre more than the check plots. In 2006, the experiment was expanded to evaluate the yield responses of four varieties treated at stage R3. Additionally, one variety was evaluated for responses to treatments applied at stage R1 and stage R3. The experiment was repeated in 2007 using the same varieties and application timings as the 2006 experiment.

Disciplines
Agricultural Science | Agriculture

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Introduction

BASF Corporation agronomists have reported that applications of Headline fungicide improve general soybean plant health and ultimately improve yields. The response to Headline fungicide has been evaluated at the Northern Research Farm for the past three years. In 2005, a single soybean variety sprayed at stage R3 yielded 4.3 bushels/acre more than the check plots. In 2006, the experiment was expanded to evaluate the yield responses of four varieties treated at stage R3. Additionally, one variety was evaluated for responses to treatments applied at stage R1 and stage R3. The experiment was repeated in 2007 using the same varieties and application timings as the 2006 experiment.

Materials and Methods

The experiment used a randomized complete block design with variety as the main plot factor and fungicide treatment as the split plot treatment. Each treated plot was 20 ft × 60 ft. Four unique early maturity group II varieties were evaluated. The plot was planted on May 17 at a seeding rate of 9 beans/ft (156,800 seeds/acre). The experiment was treated with glyphosate on June 11 and July 9 to control weeds. The fungicide was applied to variety L-2136 at stage R1 on June 29. The remainder of the fungicide treatments was applied to all the varieties at stage R3 on July 18. All four varieties were treated with 6.0 oz/acre of Headline fungicide. The plot was harvested on September 23. Yields were calculated on a dry matter basis.

Results and Discussion

In 2006, the average yield response to an application of Headline fungicide was 2.6 bushels/acre, however this was not statistically different ($P > 0.05$). The yield response ranged from 1.1 to 3.8 bushels/acre. Latham 2136 had a 2.9 bushels/acre increase when treated at stage R1 and a 3.8 bushel/acre increase when treated at stage R3.

In 2007, an average yield response of 3.2 bushels/acre was attained by treating plots at stage R3, although this was not statistically different ($P > 0.05$). Responses ranged from 1.7 to 4.3 bushels/acre. Treating variety L-2136 at stage R1 provided a 2.2 bushel/acre increase over the check; however, a 3.2 bushel/acre increase was attained when the same variety was treated at stage R3.

When averaged across both years the yield response was 2.8 bushels/acre (Table 3), and this was a statistically significant response to the fungicide treatment ($P < 0.05$). Statistical analysis showed a significant difference between years. All varieties responded positively to an application of Headline fungicide. Differences in the yield response of individual varieties occurred. The yield response on Latham 2038 was less than the yield response on the other varieties in both years. Thereafter no one variety consistently out yielded the other varieties in both years. When the yield response of an individual variety was compared with the yield response of each of the other varieties, the statistical analysis showed that the relative responses were not the same. Although an application of fungicide to Latham 2136 at R3 consistently resulted in a greater yield response, this was not statistically significant ($P > 0.05$). Yield responses were not significant due to high variability between plots.

Conclusions

Although the responses vary from year to year, and from variety to variety, it appears that application of Headline fungicide at growth stage R3 may provide an average increase of

3 bushels/acre. All varieties responded positively in varying degrees.

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Table 1. 2006 and 2007 soybean yield response to Headline fungicide.

Variety	Treated	Check	Response
Latham 2038	59.1	56.9	2.2
Latham 2045	57.8	54.4	3.4
Latham 2136	59.0	55.6	3.5
Latham 2183	55.7	53.5	2.2
Average	57.9	55.1	2.8*

*Significant difference at alpha = 0.05.

Table 2. 2006 soybean yield response to Headline fungicide.

Variety	Treated	Check	Response
Latham 2038	55.1	54.0	1.1
Latham 2045	56.3	53.8	2.5
Latham 2136	55.3	51.5	3.8
Latham 2183	52.7	50.0	2.7
Average	54.9	52.3	2.6 N. S.[1]

[1]Response was not significant; probability > F = 0.35.

Table 3. 2007 soybean yield response to Headline fungicide.

Variety	Treated	Check	Response
Latham 2038	63.2	59.8	3.4
Latham 2045	59.3	55.0	4.3
Latham 2136	62.8	59.6	3.2
Latham 2183	58.7	57.0	1.7
Average	61.0	57.9	3.2 N.S.[1]

[1]The difference was not significantly different at the alpha = 0.05 level; however, probability > F was 0.08.

Table 4. Average yield responses attained from Latham 2136 at two crop stages, 2006.

Treatment	Yield (bu/acre)	Response (bu/acre)
R1	54.4	2.9[1]
R3	55.3	3.8[1]
Check	51.5	-----

[1]Responses were not significantly different than the check.

Table 5. Average yield responses attained from Latham 2136 at two crop stages, 2007

Treatment	Yield (bu/acre)	Response (bu/acre)
R1	61.8	2.2
R3	62.8	3.2
Check	62.3 N. S.[1]	------

[1]Responses were not significantly different than the check.